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IS 8928 (1988): Chaguls [TXD 20: Made-up Textiles]



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IS : 8928 - 1978

Indian Standard
SPECIFICATION FOR *CHAGUL*

UDC 621.642.17.031 CHA [677.11.064.13]



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MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG,
NEW DELHI 110002

December 1978

AMENDMENT NO. 1 AUGUST 2002
TO
IS 8928 : 1988 SPECIFICATION FOR CHAGUL
(First Revision)

(Page 2, clause 4.2.1) — Insert the following new clause after 4.2.1:

‘4.3 Static Pressure Head Test

Water tanks when subjected to 150 mm water pressure head test as per IS 7940: 1976† shall not have leakage of water, exceeding 80 ml.’

(Page 2, footnote) — Insert the following footnote at the end:

‘†Method for determining resistance to penetration by water of fabrics by static pressure head test.’

[Page 3, Appendix A, Sl No. (i), Weave, col 2] — Substitute ‘Plain, Oxford or Basket’ for ‘Plain, Oxford’.

[Page 3, Appendix A, Sl No. (iv), Mass, g/m^2] — Substitute the following for the existing:

CHARACTERISTIC	REQUIREMENT	METHOD OF TEST
iv) Mass, g/m^2 :		IS 1964 : 1970†
a) For plain and Oxford weaves	890 + 45 - 20 + 50	
b) For basket weave	1 050 - 25	

Indian Standard

SPECIFICATION FOR CHAGUL

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(Continued on page 2)

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IS : 8928 - 1978

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Indian Standard

SPECIFICATION FOR *CHAGUL*

0. FOREWORD

0.1 This Indian Standard was adopted by the Indian Standards Institution on 1 September 1978, after the draft finalized by the Made-Up Textile Items Sectional Committee had been approved by the Textile Division Council.

0.2 *CHAGULS* are used for storing and cooling drinking water by the personnel in military, para-military, police organizations, etc.

0.3 *CHAGULS* are generally made from flax canvas or cotton-jute union canvas. The requirements of basic materials have not been included in this standard since improved basic fabrics for making water-cooling and water-holding stores are still under development at the Chief Inspectorate of Textiles & Clothing, Kanpur and Defence Materials & Stores Research & Development Establishment, Kanpur.

0.4 *CHAGULS* manufactured against IND/TC/0684 '*CHAGUL*, Universal' issued by the Chief Inspectorate of Textiles & Clothing, Ministry of Defence, Government of India, are covered in this standard.

0.5 To familiarize the industry with the International System of Units (SI Units), the basic as well as recommended SI Units for use in the textile industry are given in Appendix A.

0.5.1 Standards of Weights and Measures Act, 1976 also stipulates use of SI Units.

0.6 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS : 2-1960*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

1. SCOPE

1.1 This standard covers two types of *CHAGULS* based on their water retention capacity (see 4.3).

*Rules for rounding off numerical values (revised).

2. MATERIALS

2.1 The requirements of materials to be used in the manufacture of *CHAGULS* are given in Table 1.

TABLE 1 MATERIALS USED IN THE MANUFACTURE OF CHAGULS

Sl. No.	MATERIAL	REQUIREMENT
(1)	(2)	(3)
i)	Basic fabric	As specified in the contract or order (see Note)
ii)	Thin webbing, undyed, 25 mm wide	Conforming to IS : 6488-1975*
iii)	Cotton sewing thread, 60 tex \times (10 ^s /3)	Of matching shade and conforming to IS : 1720-1969†
iv)	Flax sewing thread, 92 tex \times 5 (18/3)	Conforming to IS : 2196-1966‡
v)	Hemp line, 16 mm size	Conforming to IS : 5176-1969§
vi)	Aluminium eyelets, size 24	Conforming to IS : 4084-1978

NOTE — The recommended specification of cotton jute canvas is given in Appendix B.

*Specification for cotton webbing for personal web equipment (*first revision*).

†Specification for cotton sewing threads (*first revision*).

‡Specification for linen sewing thread for aeronautical purposes (*revised*).

§Specification for hawser-laid hemp line and ropes.

||Specification for eyelets and washers (*first revision*).

3. DIMENSIONS AND MANUFACTURING DETAILS

3.1 The manufacturing details and dimensions with applicable tolerance are given in Fig. 1.

3.2 **Eyelets** — The holes for eyelets shall be first punched with a small size punch, enlarged to the required size by using a marline spike and the eyelets fixed with washers.

3.3 The stitching shall be of even tension throughout and all the loose ends securely fastened. The number of stitches shall be 30/dm, *Min*.

3.4 The turn-in at the stitches shall be extended to the maximum extent.

3.5 For shade, tone, general appearance and other requirements not covered in this standard, the *CHAGULS* shall not be inferior to the sealed sample agreed to in the contract or order.

NOTE — For *CHAGULS* to be manufactured for the Defence, the sealed sample may be obtained from the Chief Inspectorate of Textiles & Clothing, Kanpur.

4. PERFORMANCE TEST

4.1 The water retention test shall be carried out at $27 \pm 2^\circ\text{C}$ and 65 per cent relative humidity (see IS : 196-1966*).

NOTE — For conditioning the sample before test IS : 6359-1971† may be referred.

4.2 Water Retention Test — The *CHAGULS* under test shall be filled with water to the brim and suspended in a container filled with water. While suspending more than one *CHAGUL* in a container care shall be taken to keep them apart so that the surfaces of the *CHAGULS* do not touch each other. After soaking for 48 hours each *CHAGUL* shall be filled with 4.0 litres of water and suspended in air keeping them apart from each other.

4.3 The *CHAGULS* shall be of two types, namely, Type 1 and Type 2 depending upon their performance as given below:

Type	Performance Requirement
1	The water retained after one hour shall be 90 per cent (3.6 litres), <i>Min</i> and after 24 hours 85 percent (3.4 litres), <i>Min</i> . During this test the loss of water after one hour shall be made up by topping it to its original quantity of 4.0 litres.
2	The water retention after 16 hours shall be 65 per cent (2.6 litres), <i>Min</i> . During this test after 1 hour and 7 hours loss of the water shall be made up by topping it to its original quantity of 4.0 litres.

5. MARKING

5.1 Each *CHAGUL* shall be legibly marked in indelible ink, in the space ear marked in Fig. 1, with the following information, the height of letters being 10 mm, *Min* :

- Manufacturer's name, initials or trade-mark;
- Year of manufacture;
- Overall length (mm);
- The legend 'TO BE SOAKED IN WATER FOR 48 HOURS BEFORE USE'; and
- Any other information desired by the indenter.

5.1.1 The *CHAGULS* may be marked with the ISI Certification Mark also.

*Atmospheric conditions for testing (revised).

†Method for conditioning of textiles.

NOTE — The use of the ISI Certification Mark is governed by the provisions of the Indian Standards Institution (Certification Marks) Act, and the Rules and Regulations made thereunder. The ISI Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well-defined system of inspection, testing and quality control which is devised and supervised by ISI and operated by the producer. ISI marked products are also continuously checked by ISI for conformity to that standard as a further safeguard. Details of conditions, under which a licence for the use of the ISI Certification Mark may be granted to manufacturers or processors, may be obtained from the Indian Standards Institution.

6. PACKING

6.1 The *CHAGULS* shall be packed as specified in the contract or order.

NOTE — If so specified by the purchaser, the *CHAGULS* may be packed as follows:

Each *CHAGUL* shall be pressed flat. Ten such *CHAGULS* shall be made into a bundle by tying them suitably with 3-ply jute twine. Five such bundles shall be wrapped first with polyethylene film of at least 40 microns (see IS : 2508-1977*) or waterproof paper (see IS : 1398-1968†) and then with heavy cee jute cloth (see IS : 3751-1966‡) or two layers of hessian (see IS : 2818§) to form a compact bale of rectangular shape. The bale shall not be pressed.

The overlapping of the inner layer shall be at least 10 cm so as to ensure full protection to the contents of the bale. The overlapping of the outer layer shall be such that it can be properly and securely sewn at the sides of bale.

The bale shall be stitched with double 3-ply jute twine with not less than 12 stitches per decimetre taking care not to pierce the contents of the bale during stitching. Sufficient heavy cee cloth or hessian shall be pulled out at each corner to form ears of about 15 cm in length. The gross mass of the bale shall not normally exceed 40 kg.

7. SAMPLING

7.1 The sampling, inspection and testing scheme shall be as specified in the contract or order.

NOTE 1 — For selecting a suitable single, double or multiple sampling plan IS : 2500 (Part I)-1973|| may be referred.

NOTE 2 — Generally an acceptance quality level (AQL) of 4 percent is used for the textile stores.

*Specification for low density polyethylene films (first revision).

†Specification for packing paper waterproof bitumen-laminated (first revision).

‡Specification for heavy cee cloth.

§Specification for Indian hessian.

||Sampling inspection tables: Part I Inspection by attributes and by count of defects (first revision).

APPENDIX A*(Clause 0.5)***SI UNITS****TABLE 2 INTERNATIONAL SYSTEM OF UNITS****Base Units**

QUANTITY	UNIT	SYMBOL
Length	metre	m
Mass	kilogram	kg
Time	second	s
Electric current	ampere	A
Thermodynamic temperature	kelvin	K
Luminous intensity	candela	cd
Amount of substance	mole	mol

Supplementary Units

QUANTITY	UNIT	SYMBOL
Plane angle	radian	rad
Solid angle	steradian	sr

Derived Units

QUANTITY	UNIT	SYMBOL	CONVERSION
Force	newton	N	1 N = 0.101 972 kgf
Energy	joule	J	1 J = 1 N.m
Power	watt	W	1 W = 1 J/s
Flux	weber	Wb	1 Wb = 1 V.s
Flux density	tesla	T	1 T = 1 Wb/m ²
Frequency	hertz	Hz	1 Hz = 1 c/s (s ⁻¹)
Electric conductance	siemens	S	1 S = 1 A/V
Pressure, stress	pascal	Pa	1 Pa = 1 N/m ²

TABLE 3 RECOMMENDED SI UNITS FOR TEXTILES

Sl. No.	CHARACTERISTIC	SI UNIT		APPLICATION
		Unit	Abbreviation	
(1)	(2)	(3)	(4)	(5)
1)	Length	Millimetre	mm	Fibre
		Millimetre, centimetre	mm, cm	Samples and test specimens (as appropriate)
		Metre	m	Yarns, ropes and cordages, fabrics
2)	Width	Millimetre	mm	Narrow fabrics
		Centimetre	cm	Other fabrics
		Millimetre, centimetre	mm, cm	Samples and test specimen (as appropriate)
		Centimetre, metre	cm, m	Carpets, druggets, durries (as appropriate)
3)	Thickness	Micrometre (micron)	μm	Delicate fabrics
		Millimetre	mm	Other fabrics, carpets, felts
4)	Linear density	Tex	tex	Yarns
		Millitex	mtex	Fibres
		Decitex	dtex	Filament and filament yarns
		Kilotex	ktex	Slivers, ropes and cordages
5)	Diameter	Micrometre (micron)	μm	Fibres
		Millimetre	mm	Yarns, ropes, cordages
6)	Circumference	Millimetre	mm	Ropes, cordages
7)	Threads in cloth :			Woven fabrics (as appropriate)
a)	Length	Number per centimetre	ends/cm	
		Number per decimetre	ends/dm	
b)	Width	Number per centimetre	picks/cm	
		Number per decimetre	picks/dm	
3)	Warp threads in loom	Number per centimetre	ends/cm	Reeds
9)	Stitches in knitted cloth:			Knitted fabrics (as appropriate)
a)	Length	Courses per centimetre	courses/cm	
		Courses per decimetre	courses/dm	
b)	Width	Wales per centimetre	wales/cm	
		Wales per decimetre	wales/dm	

(Continued)

TABLE 3 RECOMMENDED SI UNITS FOR TEXTILES — *Contd*

Sl. No.	CHARACTERISTIC	SI UNIT		APPLICATION
		Unit	Abbreviation	
(1)	(2)	(3)	(4)	(5)
10)	Stitch length	Millimetre	mm	Knitted fabrics, made-up fabrics
11)	Mass per unit area	Grams per square metre	g/m ²	Fabrics
12)	Mass per unit length	Grams per metre	g/m	Fabrics
13)	Twist	Turns per centimetre Turns per metre	turns/cm turns/m	Yarns, ropes (as appropriate)
14)	Test or gauge length	Millimetre, centimetre	mm, cm	Fibres, yarns and fabric specimens (as appropriate)
15)	Breaking load	Millinewton	mN	Fibres, delicate yarns (skeins or individual)
		Newton	N	Strong yarns (individual or skeins), ropes and cordages, fabrics
16)	Breaking length	Kilometre	km	Yarns
17)	Tenacity	Millinewton per tex	mN/tex	Fibres, yarns (individual or skeins)
18)	Twist factor or twist multiplier	Turns per centimetre × square root of tex	turns/cm $\sqrt[4]{\text{tex}}$	Yarns (as appropriate)
		Turns per metre × square root of tex	turns/m $\sqrt[4]{\text{tex}}$	
19)	Bursting strength	Newton per square centimetre	N/cm ²	Fabrics
20)	Tear strength	Millinewton	mN	Fabrics (as appropriate)
		Newton	N	
21)	Pile height	Millimetre	mm	Carpets
22)	Pile density	Mass of pile yarn in grams per square metre per millimetre pile height	g/m ² /mm pile height	Pile carpet
23)	Elastic modulus	Millinewton per tex per unit deformation	mN/tex/unit deformation	Fibres, yarns, strands

APPENDIX B*(Table 1)***RECOMMENDED SPECIFICATION FOR
COTTON-JUTE CANVAS**

Count of cotton yarn in the warp	40 tex \times 3 (15 ² /3)
Count of jute yarn in the weft	300 tex (8·7)
Ends/dm	280
Picks/dm	130
Mass (weight)	780 g/m ²
Breaking load:	
Warp	1 600 N (160 kgf)
Weft	2 250 N (225 kgf)
Elongation at break	5 to 35 percent

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